do regret any misleading implications our statement may have.

Thank you for permitting us to review Professor Winter's letter. We are grateful for his comments.

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Anti-Rh Immune Globulin: How Should We Use It?

To the Editor: A few months ago a reliable pharmaceutical house put on the market a potent preparation of anti-Rh_0 (D) gamma globulin (IgG) for the prevention of Rh immunization by pregnancy.* Many independent studies have demonstrated that 1 ml (300 mcg) of this material, given intramuscularly to an Rh negative woman within 72 hours after she delivers an Rh positive child, almost invariably prevents primary immunization to the Rh factor. It now seems clear that widespread use of such material will eventually all but wipe out hemolytic disease of the newborn due to Rh incompatibility.

Almost immediately following the appearance of this new product, the legal counsel of the California Hospital Association issued a warning to all member hospitals and their staffs that the failure of a physician to provide such treatment may leave him open to suit. Further, he urged that patients who refuse this treatment for any reason be asked to sign a legal waiver, the facts being documented in the hospital record. His statement implied strongly that this agent has thoroughly proven itself, and that no further research is needed.

As a matter of fact, the indications for the use of Rh immunoglobulin, and the correct dose under various conditions, remain by no means clear. For instance, neither the counsel's statement nor the brochure distributed with the immunoglobulin refers to ABO group of mother and child, although it is widely known that ABO compatibility plays a crucial role in the mechanism of Rh immunization, and in spite of the fact that only ABO compatible pregnancies were included in the experimental studies on this new product. Levine[1] in 1943 reported that group O, Rh negative women with group AB, Rh positive husbands almost never develop Rh antibodies due to pregnancies alone, presumably because their fetuses are all of *incompatible* ABO group. Prokop[2] failed to stimulate the production of Rh antibodies in Rh negative volunteers by injecting Rh positive blood of incompatible ABO group. Stern et al,[3,4] in a similar experiment, found a few such volunteers who did develop Rh antibodies, but the percentage was small, and the antibodies invariably of low titer. Furthermore, they injected much larger volumes of Rh positive blood than normally reach the maternal circulation during pregnancy and delivery. The question as to whether Rh negative women are *ever* immunized against the Rh factor by *uncomplicated* ABO incompatible pregnancies must remain in some doubt.

On the other hand, 1 ml of anti-Rh immune globulin may at times prove entirely inadequate. Woodrow[5] and his colleagues in Great Britain demonstrated that the likelihood of Rh immunization in ABO compatible pregnancies is directly proportional to the amount of fetal blood reaching the maternal circulation. There are at least two reports[6,7] of five Rh negative women who promptly developed Rh antibodies after delivering an Rh positive baby in spite of receiving injections of more than the recommended 300 mcg of immunoglobulin. Failure of the globulin to prevent immunization was presumably due to the very much larger than normal amounts of fetal blood in the circulation of these women, ranging in estimated volume from 60 to 350 ml. Woodrow et al[8] estimate that in one of every 300 deliveries, transplacental hemorrhage of over 100 ml occurs. Correspondingly, the British group has redesigned their study on the basis of Kleihauer tests of the mothers' blood after delivery, giving 1 ml of anti-Rh immunoglobulin when there is evidence of a fetal-maternal bleed of less than 0.25 ml, and giving 5 ml in case of larger fetal hemorrhage.

It is obviously much too early, therefore, to lay down, under threat of legal action, blanket rules regarding the use of Rh immunoglobulin in the prevention of Rh immunization. Rules of thumb, such as those issued by the manufacturer should serve only as a guide. Only after much more research and observation will the indications for this

*RhoGAM®, Ortho Pharmaceutical Corp., Raritan, New Jersey.

agent, and the best dose under various circumstances become entirely clear.

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REFERENCES

1. Levine, P.: Serological factors as possible causes in spontaneous abortions, J. Heredity, 34:71-80, 1943.
2. Prokop, O.: Quoted in Stern et al, Ref #3.
3. Stern, K., Davidsohn, I., and Masaitis, L.: Experimental studies on Rh immunization, Am. J. Clin. Path., 26:833-843, Aug. 1956.
4. Stern, K., Goodman, H. S., and Berger, M.: Experimental isoimmunization to hemoantigens in man, J. Immunol., 87:189-198, 1961.
5. Woodrow, J. C., and Finn, R.: Transplacental haemorrhage, Brit. J. Haematol., 12:297-309, May 1966.
6. Hughes-Jones, N. C., and Mollison, P. L.: Failure of a relatively small dose of passively administered anti-Rh to suppress primary immunization by a relatively large dose of Rh positive red cells, Brit. Med. J., 1:150-151, 20 Jan. 1968.
7. Dudok de Wit, C., and Barst-Eilers, E.: Failure of anti-D immunoglobulin injection to protect against Rhesus immunization after massive foeto-maternal hemorrhage, Brit. Med. J., 1:152-154, 20 Jan. 1968.
8. Woodrow, J. C., Bowley, C. C., Gilliver, B. C., and Strong, S. J.: Prevention of Rh immunization due to large volumes of Rh-positive blood, Brit. Med. J., 1:148-150, 20 Jan. 1968.

Keeping Abreast of Inflation

To the Editor: As inflation presses faster upon us it is time the physicians of California devoted some more detailed study to the inflationary way of life.

One basic feature of inflation is that there is no longer a fixed value to the currency. This was assured by the shift to a fiat currency this past year. Thus if you evaluate an object or service rendered in dollars you must recognize that it is the dollar of the moment in which you are speaking. If you wish to compare to the value at another time, those current dollars must be converted. At present the Consumer's Price Index of the U.S. Bureau of Labor Statistics seems to afford the most widely used dollar value comparator.

In the practice of medicine we can evaluate our services in units. This unit has a definite fixed standard (*i.e.* one office visit, one-fourth hour of anaesthesia, or whatever suits your practice). This evaluation in units remains the same from year to year. To understand inflationary pressures on your income the units of service rendered, the unit value in dollars of the present or projected time, and the value in dollars in a base time period all need to be considered.

The table shown provides one such comparison. The underlined figures in the table show the relationship between spendable income in 1960 with a unit value of $5.00 and the spendable income in 1968 with a unit value of $7.00. Any one can work out his own table for his own units of income. It should be noted that in most practices the cost of doing business has increased at least 50 percent and often up to 75 percent since 1960. Thus a 10,000-unit service performance in 1960 may have broken down to 4,200 units for business expense and 800 units for deductible personal expenses. If your units of service performed are the same in 1968 as in 1960 and you have raised your unit value from $5.00 to $7.00, you would have money to cover a $10,000 increase in business expense and deductible personal expenses. If, however, you had an actual increase of $15,000 instead, you needed a unit valuation of $7.50 to just about break even in the comparison of 1968 spendable income with 1960.

This, of course, allows no increase in compensation for any greater knowledge and proficiency

	Married, two dependents						*Unmarried*	
Units earned (see below)	5,000	5,000	6,000	6,000	7,000	7,000	5,000	5,000
Unit Value	$5	$7	$5	$7	$5	$7	$5	$7
Gross in 1960 Dollars	$25,000	$35,000	$30,000	$42,000	$35,000	$49,000	$25,000	$35,000
Tax in 1960	6,808	11,806	9,146	15,764	11,806	18,924	11,916	17,840
Net Spendable Income, 1960	18,192	23,194	20,854	26,236	23,194	30,076	13,084	17,160
Tax in 1968	7,226	12,073	9,471	16,050	12,073	20,405	11,101	17,748
Net Spendable Income, 1968	17,774	22,927	20,529	25,950	22,927	28,595	13,899	17,252
Ditto in 1960 Dollars (80¢)	14,219	18,342	16,423	20,760	18,342	22,876	11,119	13,802
Net spendable income from next dollar earned in 1960 Dollars (80¢)	47½¢	38½¢	43½¢	36¢	38½¢	32¢	22½¢	28¢

Units earned represent the units available as spendable income (before taxes) after the units spent as business expense and personal deductions have been removed. Any increase in these two items beyond the increase afforded by unit value change would necessitate an overall increase in the number of units of service performed and collected. The underscored figures relate the net spendable income in 1960 and 1968 to a constant purchasing power.

Note: The valuation of 1968 dollars as 80 cents in terms of 1960 dollars is as projected on December 31, 1968. As of October, 1968, it is approximately 81 cents.